

**REMARKS/ARGUMENTS**

Re-examination and favorable reconsideration in light of the above amendments and the following comments are respectfully requested.

Claims 1 - 55 are pending in the application. Currently, all claims have been rejected.

By the present amendment, claims 6 and 11 - 13 have been cancelled without prejudice and claims 1, 3, 5, 7 - 10, 14, 18, 22, 25, 27 - 31, 33, 35, 36, 38 - 44, and 46 have been amended.

In the office action mailed June 6, 2005, claims 14 - 24 were rejected under the judicially created doctrine of obviousness type double patenting as being unpatentable over claims 1 - 11 of U.S. Patent No. 6,730,422 to Litton et al. in view of U.S. Patent No. 6,258,467 to Subramanian; claims 13 and 25 - 44 were provisionally rejected under the judicially created doctrine of obviousness type double patenting as being unpatentable over claims 7 - 26 and 38 of co-pending application no. 10/641,585 in view of Subramanian; claims 1, 2, 6 - 12, 22, 23, 25, 26, 28, 36 and 37 were rejected under 35 U.S.C. 102(b) over Subramanian; claims 3 - 5, 45, 39, 50, 54, and 55 were rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian in view of U.S. Patent No. 6,759,151 to Lee; claims 36 and 38 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,025,078 to Rickerby et al. in view of Subramanian; claims 27, 28, and 40 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,586,115 to Rigney in view of Subramanian; claims 12, 25, 27- 30, 36, and 38 - 44 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,812,176 to Zhu in view of Subramanian; claims 31 and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,059,095 to

Kushner et al. in view of Subramanian; claims 3 - 5, and 45 - 55 were rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian in view of U.S. Patent No. 6,733,908 to Lee et al.; and claims 3 - 5, 45, and 46 were rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian in view of U.S. Patent No. 6,844,075 to Saak et al.

The foregoing rejections are traversed by the present response.

With regard to the obviousness-type double patenting rejections, terminal disclaimers are appended hereto. Therefore, these rejections are now moot.

With regard to the anticipation rejection of claims 1, 2, 6 - 12, 22, 23, 25, 26, 28, 36 and 37 over Subramanian, it is necessary for a reference to contain each and every element of a claim in order to anticipate same. The rejection as it applies to claims 6, 11, and 12 is now moot in view of the cancellation of these claims. With regard to the remaining claims, it is submitted that Subramanian does not contain each of the claimed elements. For example, claim 1 now calls for the thermal barrier coating to contain ceria as the first oxide. Subramanian does not teach or suggest the use of ceria. Thus, claim 1 is allowable over Subramanian. Claims 2 and 7 - 10 are allowable for the same reasons as claim 1, as well as on their own accord.

With respect to the rejection of claim 22 over Subramanian, this claim relates to a thermal barrier coating consisting of from 5 to 60 mol% of at least one of  $\text{La}_2\text{O}_3$  and  $\text{Sm}_2\text{O}_3$ , and from 5 to 60 mol% of at least one oxide having a formula  $\text{A}_2\text{O}_3$  where A is selected from the group consisting of Sc, In, Y, Pr, Nd, Eu, Gd, Dy, Er, Yb, and mixtures thereof, and the balance being zirconia. Subramanian does not disclose any such composition. In fact, Subramanian is totally silent on the issue ranges of

compositional elements and only contains two oxides including zirconia. Claims 23 and 24 are allowable for the same reasons as claim 22 as well as on their own accord.

With respect to the rejection of claim 25 as being anticipated by Subramanian, this claim relates to a thermal barrier coating consisting of from 0.5 to 22.5 mol% of at least one first oxide having a formula  $A_2O_3$  where A is selected from the group consisting of La, Tb, Tm, and Lu combined with a second oxide selected from the group consisting of zirconia, hafnia, and ceria. Subramanian does not teach or suggest at least one first oxide as set forth in the claimed amount and the claimed constituents. There is no disclosure in Subramanian of any first oxide compositional constituent being present in an amount other than 33 mol%. For this reason, claim 25, as well as claim 26, is allowable.

With respect to the rejection of claim 28 as being anticipated by Subramanian, this claim is allowable for the same reason as claim 25. This claim is also allowable because the coatings in Subramanian lack the claimed at least one third oxide.

With respect to the rejection of claim 36 as being anticipated by Subramanian, this claim is allowable because Subramanian does not teach or suggest the claimed at least one first oxide in the amount set forth in the claim. Subramanian does not teach or suggest any compositional amount less than 33 mol%. Subramanian is totally silent on the point. Claim 37 is allowable for the same reason as claim 36 as well as on its own accord.

The rejection of claims 3 - 5, 45, 49, 50, 54, and 55 on obviousness grounds over Subramanian in vie of Lee '151 is duly noted; however, Subramanian does not cure the aforementioned deficiencies of Subramanian. Thus, these claims are allowable for the same reason as claim 1, as well as on their own accord.

The rejection of claims 36 and 38 over Rickerby and Subramanian is duly noted; however, neither of the cited and applied references teaches or suggests the claimed thermal barrier coatings of claims 36 and 38. In particular, claim 36 calls for the thermal barrier coating to have a composition consisting of from 9.0 to 22.5 mol% of at least one first oxide selected from the group consisting of  $\text{Pr}_2\text{O}_3$ ,  $\text{Nd}_2\text{O}_3$ ,  $\text{Eu}_2\text{O}_3$ , and mixtures thereof, combined with a second oxide selected from the group consisting of zirconis, hafnia, and ceria. Claim 38 is allowable for the same reason that claim 36 is allowable and further because the references do not teach or suggest the claimed at least one third oxide in combination with the at least one first oxide and the second oxide.

Claims 27, 28, and 30 are allowable because neither Rigney et al. nor Subramanian, taken alone or in combination with each other teach or suggest the claimed invention. In particular, claim 27 is allowable because neither of the references teaches or suggests the claimed third oxide in combination with the at least one first oxide and the second oxide. Claims 28 and 30 are allowable because Rigney et al. nor Subramanian teaches or suggests the claimed third oxide in combination with the other elements. Still further, Rigney discloses the use of yttria partially stabilized zirconia in all of its compositions. This

means that yttria is present in all compositions; however, the compositions set forth in claims 27, 28, and 29 preclude the presence of yttria due to the "consisting of" language which is used in the claims.

With regard to the rejection of claim 12 over Zhu in view of Subramanian, this rejection is now moot in view of the cancellation of claim 12. With regard to the rejection of claims 25, 27 - 30, 36, and 38 - 44, each of these claims has been amended to use "consisting of" language which excludes the Zhu compositions. For example, claims 25, 39, and 42 are allowable because the claims call for only two oxides, while Zhu has a mandatory three oxides present. Claims 27 and 28 are allowable because there is no disclosure in Zhu of the claimed at least one first oxide. Claims 29, 43, and 44 are allowable because Zhu does not disclose the use of ceria. Claim 30 is allowable because Zhu does not teach or suggest the claimed at least one third oxide. Claims 36 and 38 are allowable because Zhu requires a primary stabilizer which is excluded by the claim language. Claims 40 and 41 are allowable because Zhu does not teach or suggest the claimed compositions. The secondary reference to Subramanian does not cure the aforementioned defects of Zhu, thus this rejection should be withdrawn.

Independent claim 31 is directed to a turbine component having a thermal barrier coating which consists of ceria and an oxide selected from the group consisting of hafnia and zirconia. A review of the Kushner et al. patent reveals that it relates to a coating which contains alumina as well as ceria and zirconia. Since alumina is excluded from claim 31 by virtue of the "consisting of" language, Kushner et al. do not teach or suggest the turbine component set forth in claim 31 having the claimed thermal barrier coating. Subramanian does not cure this defect

in Kushner et al. Thus, claim 31, as well as claim 32, is allowable over Kushner et al.

With regard to the rejection of claims 3 - 5 and 45 - 55 as being unpatentable over Subramanian in view of Lee '908, the secondary reference to Lee does not cure the aforementioned deficiencies of Subramanian, thus claims 3 - 5, 45, and 47 - 55 are allowable for the same reasons as claim 1. As for claim 46, neither reference teaches or suggests a bond coat layer between and in contact with a substrate and a thermal barrier coating, which bond coat layer is formed from Ta<sub>2</sub>O<sub>5</sub>.

With regard to the rejection of claims 3 - 5, 45, and 46 over Subramanian in view of Saak, the secondary reference to Saak does not cure the aforementioned deficiencies of Subramanian, thus claims 3 - 5, and 45 are allowable for the same reasons as claim 1. As for claim 46, neither reference teaches or suggests a bond coat layer between and in contact with a substrate and a thermal barrier coating, which bond coat layer is formed from Ta<sub>2</sub>O<sub>5</sub>.

For the foregoing reasons, the instant application is believed to be in condition for allowance. Such allowance is respectfully solicited.

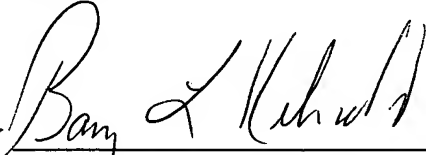
Should the Examiner believe an additional amendment is needed to place the case in condition for allowance, she is hereby invited to contact Applicants' attorney at the telephone number listed below.

The Director is hereby authorized to charge Deposit Account No. 21-0279 in the amount of \$3,860.00 to cover the cost of the terminal disclaimers and the additional independent claims.

Should the Director determine that an additional fee is due, he is hereby authorized to charge said fee to said Deposit Account.

Respectfully submitted,

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I, Nicole Motzer, hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on September 6, 2005.

